

#23

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1600

RAW SEQUENCE LISTING

DATE: 03/13/2002

PATENT APPLICATION: US/09/311,689B

TIME: 11:22:09

Input Set : A:\0571R2SEQLIST.TXT

Output Set: N:\CRF3\03132002\I311689B.raw

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4 <110> APPLICANT: Rao, Gururaj A.
5   Roesler, Keith
9 <120> TITLE OF INVENTION: Proteins With Enhanced Levels of
10   Essential Amino Acids
12 <130> FILE REFERENCE: 0571R2
14 <140> CURRENT APPLICATION NUMBER: 09/311,689B
15 <141> CURRENT FILING DATE: 1999-05-13
17 <150> PRIOR APPLICATION NUMBER: 08/740,682
18 <151> PRIOR FILING DATE: 1996-11-01
20 <150> PRIOR APPLICATION NUMBER: PCT/US97/20441
21 <151> PRIOR FILING DATE: 1997-10-31
23 <160> NUMBER OF SEQ ID NOS: 74
25 <170> SOFTWARE: FastSEQ for Windows Version 3.0
27 <210> SEQ ID NO: 1
28 <211> LENGTH: 249
29 <212> TYPE: DNA
30 <213> ORGANISM: Hordeum vulgare
32 <220> FEATURE:
33 <221> NAME/KEY: CDS
34 <222> LOCATION: (1)...(249)
36 <400> SEQUENCE: 1
37   agt tca gtg gag aag aag ccg gag gga gtg aac acc ggt gct ggt gac      48
38   Ser Ser Val Glu Lys Lys Pro Glu Gly Val Asn Thr Gly Ala Gly Asp
39   1           5           10           15
41   cgt cac aac ctg aag aca gag tgg cca gag ttg gtg ggg aaa tcg gtg      96
42   Arg His Asn Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val
43   20           25           30
45   gag gag gcc aag aag gtg att ctg cag gac aag cca gag gcg caa atc      144
46   Glu Glu Ala Lys Lys Val Ile Leu Gln Asp Lys Pro Glu Ala Gln Ile
47   35           40           45
49   ata gtt cta ccg gtg ggg aca att gtg acc atg gaa tat cgg atc gac      192
50   Ile Val Leu Pro Val Gly Thr Ile Val Thr Met Glu Tyr Arg Ile Asp
51   50           55           60
53   cgc gtc cgc ctc ttt gtc gat aaa ctc gac aac att gcc cag gtc ccc      240
54   Arg Val Arg Leu Phe Val Asp Lys Leu Asp Asn Ile Ala Gln Val Pro
55   65           70           75           80
57   agg gtc ggc      249
58   Arg Val Gly
62 <210> SEQ ID NO: 2
63 <211> LENGTH: 83
64 <212> TYPE: PRT
65 <213> ORGANISM: Hordeum vulgare
67 <400> SEQUENCE: 2

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68 Ser Ser Val Glu Lys Lys Pro Glu Gly Val Asn Thr Gly Ala Gly Asp
69 1 5 10 15
70 Arg His Asn Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val
71 20 25 30
72 Glu Glu Ala Lys Lys Val Ile Leu Gln Asp Lys Pro Glu Ala Gln Ile
73 35 40 45
74 Ile Val Leu Pro Val Gly Thr Ile Val Thr Met Glu Tyr Arg Ile Asp
75 50 55 60
76 Arg Val Arg Leu Phe Val Asp Lys Leu Asp Asn Ile Ala Gln Val Pro
77 65 70 75 80
78 Arg Val Gly
81 <210> SEQ ID NO: 3
82 <211> LENGTH: 198
83 <212> TYPE: DNA
84 <213> ORGANISM: Hordeum vulgare
86 <220> FEATURE:
87 <221> NAME/KEY: CDS
88 <222> LOCATION: (1)...(198)
90 <400> SEQUENCE: 3
91 atg aac ctg aag aca gag tgg cca gag ttg gtg ggg aaa tcg gtg gag 48
92 Met Asn Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
93 1 5 10 15
95 gag gcc aag aag gtg att ctg cag gac aag cca gag gcg caa atc ata 96
96 Glu Ala Lys Lys Val Ile Leu Gln Asp Lys Pro Glu Ala Gln Ile Ile
97 20 25 30
99 gtt cta ccg gtg ggg aca att gtg acc atg gaa tat cgg atc gac cgc 144
100 Val Leu Pro Val Gly Thr Ile Val Thr Met Glu Tyr Arg Ile Asp Arg
101 35 40 45
103 gtc cgc ctc ttt gtc gat aaa ctc gac aac att gcc cag gtc ccc agg 192
104 Val Arg Leu Phe Val Asp Lys Leu Asp Asn Ile Ala Gln Val Pro Arg
105 50 55 60
107 gtc ggc 198
108 Val Gly
109 65
112 <210> SEQ ID NO: 4
113 <211> LENGTH: 66
114 <212> TYPE: PRT
115 <213> ORGANISM: Hordeum vulgare
117 <400> SEQUENCE: 4
118 Met Asn Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
119 1 5 10 15
120 Glu Ala Lys Lys Val Ile Leu Gln Asp Lys Pro Glu Ala Gln Ile Ile
121 20 25 30
122 Val Leu Pro Val Gly Thr Ile Val Thr Met Glu Tyr Arg Ile Asp Arg
123 35 40 45
124 Val Arg Leu Phe Val Asp Lys Leu Asp Asn Ile Ala Gln Val Pro Arg
125 50 55 60
126 Val Gly
127 65

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129 <210> SEQ ID NO: 5
130 <211> LENGTH: 198
131 <212> TYPE: DNA
132 <213> ORGANISM: Hordeum vulgare
134 <220> FEATURE:
135 <221> NAME/KEY: CDS
136 <222> LOCATION: (1)...(198)
138 <400> SEQUENCE: 5
139   atg aag ctg aag aca gag tgg ccg gag ttg gtg ggg aaa tcg gtg gag      48
140   Met Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
141     1             5             10             15
143   aaa gcc aag aag gtg atc ctg aag gac aag cca gag gcg caa atc ata      96
144   Lys Ala Lys Lys Val Ile Leu Lys Asp Lys Pro Glu Ala Gln Ile Ile
145             20             25             30
147   gtt ctg ccg gtt ggt aca aag gtg acg aag gaa tat aag atc gac cgc      144
148   Val Leu Pro Val Gly Thr Lys Val Thr Lys Glu Tyr Lys Ile Asp Arg
149             35             40             45
151   gtc aag ctc ttt gtg gat aaa aag gac aac atc gcg cag gtc ccc agg      192
152   Val Lys Leu Phe Val Asp Lys Lys Asp Asn Ile Ala Gln Val Pro Arg
153             50             55             60
155   gtc ggc      198
156   Val Gly
157     65
160 <210> SEQ ID NO: 6
161 <211> LENGTH: 66
162 <212> TYPE: PRT
163 <213> ORGANISM: Hordeum vulgare
165 <400> SEQUENCE: 6
166   Met Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
167     1             5             10             15
168   Lys Ala Lys Lys Val Ile Leu Lys Asp Lys Pro Glu Ala Gln Ile Ile
169             20             25             30
170   Val Leu Pro Val Gly Thr Lys Val Thr Lys Glu Tyr Lys Ile Asp Arg
171             35             40             45
172   Val Lys Leu Phe Val Asp Lys Lys Asp Asn Ile Ala Gln Val Pro Arg
173             50             55             60
174   Val Gly
175     65
177 <210> SEQ ID NO: 7
178 <211> LENGTH: 198
179 <212> TYPE: DNA
180 <213> ORGANISM: Hordeum vulgare
182 <220> FEATURE:
183 <221> NAME/KEY: CDS
184 <222> LOCATION: (1)...(198)
186 <400> SEQUENCE: 7
187   atg aag ctg aag aca gag tgg ccg gag ttg gtg ggg aaa tcg gtg gag      48
188   Met Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
189     1             5             10             15

```

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```

191  aaa gcc aag aag gtg atc ctg aag gac aag cca gag gcg caa atc ata      96
192  Lys Ala Lys Lys Val Ile Leu Lys Asp Lys Pro Glu Ala Gln Ile Ile
193              20              25              30
195  gtt cta ccg gtt ggt aca aag gtg gcg aag gcc tat aag atc gac aag      144
196  Val Leu Pro Val Gly Thr Lys Val Ala Lys Ala Tyr Lys Ile Asp Lys
197              35              40              45
199  gtc aag ctt ttt gtg gat aaa aag gac aac atc gcg cag gtc ccc agg      192
200  Val Lys Leu Phe Val Asp Lys Lys Asp Asn Ile Ala Gln Val Pro Arg
201              50              55              60
203  gtc ggc      198
204  Val Gly
205  65
208 <210> SEQ ID NO: 8
209 <211> LENGTH: 66
210 <212> TYPE: PRT
211 <213> ORGANISM: Hordeum vulgare
213 <400> SEQUENCE: 8
214  Met Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
215  1              5              10              15
216  Lys Ala Lys Lys Val Ile Leu Lys Asp Lys Pro Glu Ala Gln Ile Ile
217              20              25              30
218  Val Leu Pro Val Gly Thr Lys Val Ala Lys Ala Tyr Lys Ile Asp Lys
219              35              40              45
220  Val Lys Leu Phe Val Asp Lys Lys Asp Asn Ile Ala Gln Val Pro Arg
221              50              55              60
222  Val Gly
223  65
225 <210> SEQ ID NO: 9
226 <211> LENGTH: 198
227 <212> TYPE: DNA
228 <213> ORGANISM: Hordeum vulgare
230 <220> FEATURE:
231 <221> NAME/KEY: CDS
232 <222> LOCATION: (1)...(198)
234 <400> SEQUENCE: 9
235  atg aag ctg aag aca gag tgg ccg gag ttg gtg ggg aaa tcg gtg gag      48
236  Met Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
237  1              5              10              15
239  aaa gcc aag aag gtg atc ctg aag gac aag cca gag gcg caa atc ata      96
240  Lys Ala Lys Lys Val Ile Leu Lys Asp Lys Pro Glu Ala Gln Ile Ile
241              20              25              30
243  gtt cta ccg gtt ggt aca aag gtg ggt aag cat tat aag atc gac aag      144
244  Val Leu Pro Val Gly Thr Lys Val Gly Lys His Tyr Lys Ile Asp Lys
245              35              40              45
247  gtc aag ctt ttt gtg gat aaa aag gac aac atc gcg cag gtc ccc agg      192
248  Val Lys Leu Phe Val Asp Lys Lys Asp Asn Ile Ala Gln Val Pro Arg
249              50              55              60
251  gtc ggc      198
252  Val Gly

```

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Input Set : A:\0571R2SEQLIST.TXT

Output Set: N:\CRF3\03132002\I311689B.raw

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253      65
256 <210> SEQ ID NO: 10
257 <211> LENGTH: 66
258 <212> TYPE: PRT
259 <213> ORGANISM: Hordeum vulgare
261 <400> SEQUENCE: 10
262 Met Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser Val Glu
263   1           5           10           15
264 Lys Ala Lys Lys Val Ile Leu Lys Asp Lys Pro Glu Ala Gln Ile Ile
265           20           25           30
266 Val Leu Pro Val Gly Thr Lys Val Gly Lys His Tyr Lys Ile Asp Lys
267           35           40           45
268 Val Lys Leu Phe Val Asp Lys Lys Asp Asn Ile Ala Gln Val Pro Arg
269           50           55           60
270 Val Gly
271      65
273 <210> SEQ ID NO: 11
274 <211> LENGTH: 252
275 <212> TYPE: DNA
276 <213> ORGANISM: Hordeum vulgare
278 <220> FEATURE:
279 <221> NAME/KEY: CDS
280 <222> LOCATION: (1)...(252)
282 <400> SEQUENCE: 11
283 atg aag tcg gtg gag aag aaa ccg aag ggt gtg aag aca ggt gcg ggt      48
284 Met Lys Ser Val Glu Lys Lys Pro Lys Gly Val Lys Thr Gly Ala Gly
285   1           5           10           15
287 gac aag cat aag ctg aag aca gag tgg ccg gag ttg gtg ggg aaa tcg      96
288 Asp Lys His Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser
289           20           25           30
291 gtg gag aaa gcc aag aag gtg atc ctg aag gac aag cca gag gcg caa      144
292 Val Glu Lys Ala Lys Lys Val Ile Leu Lys Asp Lys Pro Glu Ala Gln
293           35           40           45
295 atc ata gtt cta ccg gtt ggt aca aag gtg ggt aag cat tat aag atc      192
296 Ile Ile Val Leu Pro Val Gly Thr Lys Val Gly Lys His Tyr Lys Ile
297           50           55           60
299 gac aag gtc aag ctt ttt gtg gat aaa aag gac aac atc gcg cag gtc      240
300 Asp Lys Val Lys Leu Phe Val Asp Lys Lys Asp Asn Ile Ala Gln Val
301   65           70           75           80
303 ccc agg gtc ggc      252
304 Pro Arg Val Gly
308 <210> SEQ ID NO: 12
309 <211> LENGTH: 84
310 <212> TYPE: PRT
311 <213> ORGANISM: Hordeum vulgare
313 <400> SEQUENCE: 12
314 Met Lys Ser Val Glu Lys Lys Pro Lys Gly Val Lys Thr Gly Ala Gly
315   1           5           10           15
316 Asp Lys His Lys Leu Lys Thr Glu Trp Pro Glu Leu Val Gly Lys Ser

```

Use of n and / or Xaa has been detected in the
Sequence Listing. Review the Sequence Listing
to ensure a corresponding explanation is present
in the <220> to <223> fields of each sequence
using n or Xaa

VERIFICATION SUMMARY

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TIME: 11:22:10

Input Set : A:\0571R2SEQLIST.TXT

Output Set: N:\CRF3\03132002\I311689B.raw

L:581 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:582 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:679 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:680 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:700 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:703 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:704 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:705 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:718 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28
L:728 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28
L:765 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29
L:766 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29
L:823 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31
L:857 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
L:859 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
L:861 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
L:863 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
L:865 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
L:882 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
L:884 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
L:886 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
L:888 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
L:890 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34